


2006 FAA Designee Conference “Administrative Aspects & Tools to Support Certification”

A white Sino Swearingen aircraft is shown on a runway, facing the viewer. The aircraft has a high-wing configuration and two engines. In the background, there are rugged, brown mountains under a clear sky. The runway is dark asphalt with yellow markings.

John Ware
Certification Manager
Sino Swearingen Aircraft Corporation

Agenda

- Data retention
- Conformities, the “fun” stuff...
- Data submittals, tracking and showing compliance
- Proper care and maintenance of the PSP and PSCP

Data retention



Data retention

- Partnership for Safety Plan (PSP)
 - Agreed upon methods of communications
 - Every effort should be made to resolve action items at a level below formal letter writing
 - A common method of tracking action items should be agreed to

Data retention

- Partnership for Safety Plan (PSP)
 - Files
 - FAA to utilize SSAC resources for the formation and maintenance of the FAA Type Design data files
 - Files will be secured and will be available to the FAA anytime at the FAA's request
 - Type design data
 - Drawings, process specifications, 8110-3's
 - 8130-9's and 8100-1's
 - Administrative
 - Submittals
 - "Special requests"

Data retention

- PSCP
 - 8110.4C
 - Para 2-4i
 - ""...the [PSCP is the] depository for milestones, performance measures and information unique to the certification project..."

Data retention

- FAA Order 8110-4C, Appendix 10
 - Figure 1 - “Project Records”
 - 26 items
 - ACO or MIDO must maintain these records, at an FAA facility
 - Figure 2 – “Type Design and Substantiating Data”
 - 6 items
 - ACO or TC holder must maintain these data
 - Figure 3 – “Working Papers”
 - 7 items
 - ACO retains these papers at an FAA facility as “corporate memory” (at the ACO manager’s discretion.

Data retention

FIGURE 1. PROJECT RECORDS

(The ACO or MIDO must maintain these records, at an FAA facility.)

- Type certificate (TC) application (FAA Form 8110-12), including all preliminary data or drawings and cover letter
- Certification Project Notification (CPN)
- Minutes of Type Certification Board (TCB) meetings (familiarization, preliminary, interim, pre-flight, and final)
- Certification Project Plan (CPP)
- Equivalent Level of Safety findings
- Special conditions
- Exemptions
- Findings of Compliance (FAA Form 8110-3s) and approval letters
- Requests for Conformity (FAA Form 8120-10) and Statements of Conformity (FAA Form 8130-9)
- Conformity Inspection Record (FAA Form 8100-1)

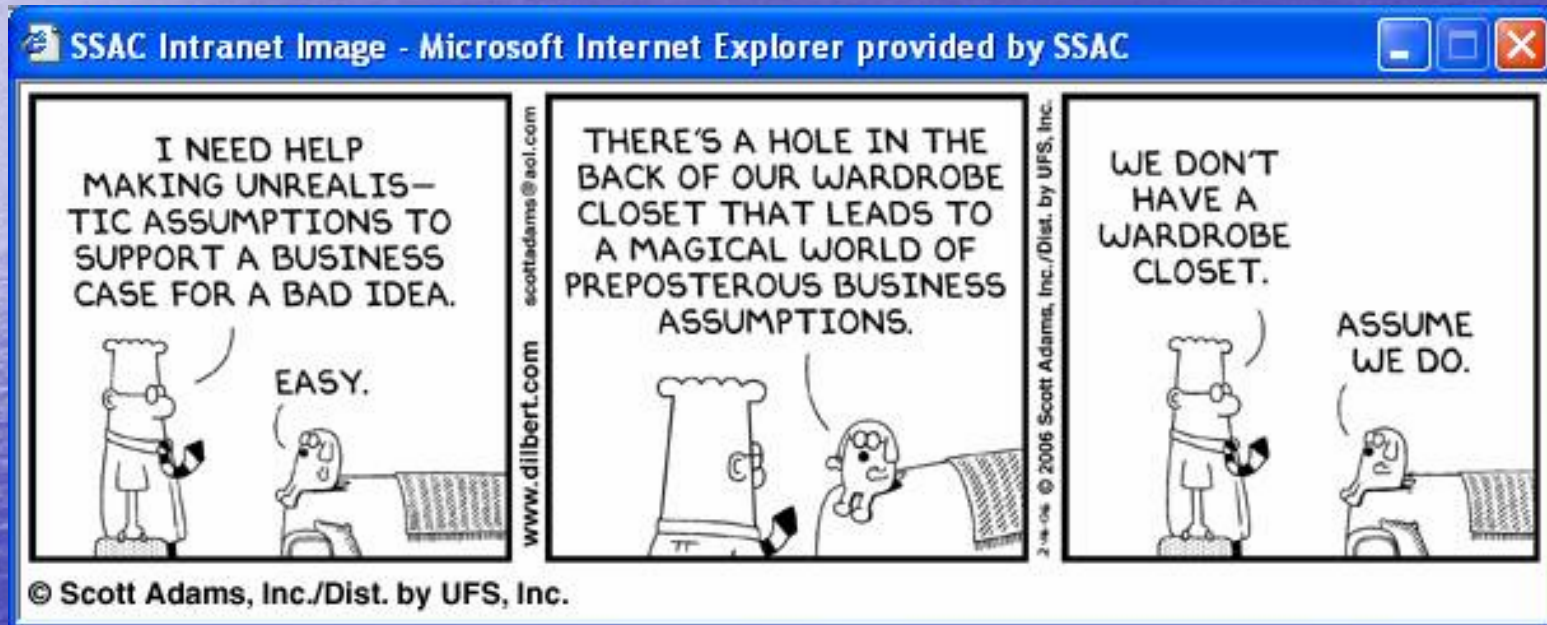
Data retention

- Airworthiness approval tags (FAA Form 8130-3) issued for conformity
- Certification Plan
- Completed compliance checklist
- Type Inspection Authorization form (FAA Form 8110-1)
- Type Inspection Report (FAA Form 8110-[]) and Supplemental Type Inspection Reports (FAA Form 8110-26)
- Application for Airworthiness Certificate (FAA Form 8130-6)
- Special Airworthiness Certificate and Operating Limitations
- Aircraft Evaluation Group's correspondence
- Significant correspondence with the CMACO
- FAA approval of test and analysis reports
- Flight manual approval page
- Approval letter for Airworthiness Limitations Section
- Approval of referenced Master Drawing List
- Type Certificate Data Sheet (TCDS)
- TC (FAA Form 8110-9) or STC (FAA Form 8110-2) with original signature
- Certification Summary Report (CSR)

Conformities, the “fun” stuff...



Conformities, the “fun” stuff...



Conformities, the “fun” stuff...

- FAA Order 8110-4C
 - Chapter 5, “Manufacturing and Engineering Responsibilities and Functions Relative to Inspection, Test, and Flight Test
 - FAA Form 8120-10, Request for Conformity
 - FAA Form 8110-1, Type Inspection Authorization
 - Usually performed by MIDO, but could be Manufacturing Inspection Satellite Office (MISO), Certificate Management Office (CMO) or Certificate Management Unit (CMU)

Requests for Conformity

- RFC is one of two ways to obtain FAA conformity on details, assemblies, installations, test articles, test setups, or other “things” supporting type certification
- Type Inspection Authorization (TIA FAA Form 8110-1) is other
- FAA Order 8110.4C governs
- Filled out by hand (typing or writing)
- Filled out through MS Access database construct

Requests for Conformity

- ACO tasking to MIDO to DAR to perform conformity
- In addition to basic “part conformity” (does the part match the drawing...?)
 - Purchase order number & date
 - Quantity
 - Design Data
 - Special Instructions
 - Remarks
- Accuracy of contact information significant

Requests for Conformity

- Revision controlled
- Company level/mfg in-process build
 - Certification Manager authorized to approve
 - FAA letter of delegation
- Conform test articles
- Conform test set-ups
- Vendor level testing
 - ACO tasking through MIO to MIDO
 - Company arranges for DAR to conduct conformity
 - DER to witness testing IAW Special Instructions



U.S. Department
of Transportation
**Federal Aviation
Administration**

Southwest Region
Arkansas, Louisiana,
New Mexico, Oklahoma,
Texas

Federal Aviation Administration
Airplane Certification Office, ASW-150
2601 Meacham Blvd
Fort Worth, TX 76137-4298

February 26, 2004

Mr. John Ware
Certification Manager
Sino Swearingen Aircraft Corporation
1770 Sky Place Boulevard
San Antonio, TX 78216

Dear Mr. Ware:

As an Administrative Designated Engineering Representative (DER), you are authorized to issue Federal Aviation Administration (FAA) Form 8120-10, REQUEST FOR CONFORMITY (RFC). This authorization is in accordance with, and in continuance of, the agreements made between Sino Swearingen Aircraft Corporation (SSAC), the San Antonio Manufacturing Inspection District Office (SW-MIDO-43), and the Airplane Certification Office (ACO), ASW-150, during a meeting held at the SSAC facility on February 24, 2000. It is anticipated that the RFCs issued over this authorization will normally be to "FAA approved data", and that RFCs issued "at risk" to unapproved data will be the exception.

This authorization is limited to those RFCs that you issue in support of the "in-process" conformities for Project Number TC 1041AC-A.

You are authorized to issue RFCs in the four (4) following situations:

1. RFCs for the Priority Parts List, which will be revised by SSAC and accepted by the ACO and SW-MIDO-43.
2. RFCs, which encompass the Engineering Change Packages (ECPs). It is anticipated these RFCs will be issued to the drawing lists for major assemblies of the prototype flight test articles.
3. RFCs for selected parts or assemblies that will be supplied to SSAC by SW-MIDO-43.
4. RFCs for any other parts or assemblies identified by SSAC as requiring conformity to support the "in-process conformity" effort.

The RFCs issued under this authorization, signed by you, should be provided with a different numbering system for tracking their issuance. This will provide for the easy identification of those RFCs issued by SSAC, and those that are issued by the ACO.

For the ACOs tracking of your activity in this matter, please provide a list to the ACO on a monthly basis that shows the RFCs issued under this authorization. It should be annotated if for some reason the RFC was issued to unapproved data, and the reason for that issuance. You should send these RFCs directly to SW-MIDO-43, unless you are otherwise directed by

SW-MIDO-43. You do not need to send copies of the FAA Forms 8120-10 to the ACO; however you should keep a copy of those RFCs for the ACO in your files.

Your listing should also include when you receive your conformity reports and the method by which you made a resolution of any unsatisfactory conformity findings. If for some reason there is not a resolution of an unsatisfactory conformity finding pursuant to an RFC you issued, you will need to inform the ACO of the reason for this inability to make resolution of the unsatisfactory finding.

It should be noted that the RFCs for test articles, which include the prototype flight test articles, the fatigue test article, the static test article, qualification test articles, and any other test articles which are utilized to respond to an FAA approved test plan, will continue to be issued by the ACO, as is now the practice.


If you have any questions or comments, please contact me at (817) 222-5222.

Sincerely,



Michele M. Owsley
Manager, Airplane Certification Office,
Rotorcraft Directorate,
Aircraft Certification Service

Requests for Conformity

REQUEST FOR CONFORMITY		Control No. ACO-
 US Department of Transportation Federal Aviation Administration		Page 1 of 2
To: Federal Aviation Administration, MIDO #43 10100 Reunion Place, Suite 650 San Antonio, Texas 78216		
Attention: _____ Project No: _____ ECP #: _____ Submitted By: _____ Revision Level: _____ Date: _____		
Request for Conformity Inspection <input checked="" type="checkbox"/> Part Conformity _____ <input type="checkbox"/> Installation _____ <input type="checkbox"/> Other (Specify) _____		
A conformity inspection pertaining to the subject is requested for the following Applicant Name: <u>Sino Swearingen Aircraft Corporation (SSAC)</u> Company Name: _____ Street: _____ City: _____ State: _____ Zip: _____ Time/Date Available: _____ Applicant will Contact FAA Type Installation: _____ Make/Model: _____ Quantity: _____ Requesting Document (P.O.) and Date: _____ Date of PO: _____		
Design Data: <u>See page 2 for attachments</u> Special: <u>See page 2 for attachments</u>		
Applicant Contact: _____ Phone: _____ FAA Project Manager: _____ Phone: _____		
Remarks: <u>See page 2 for attachments</u> <input type="checkbox"/> T. I. A. Issued (Type Inspection Authorization) FAA Form 8100-1 Required (Conformity Inspection Report) <input type="checkbox"/> T. I. R. Required (Type Inspection Report) FAA Form 8130-9 Required (Statement of Conformity) <input type="checkbox"/> 8130-3 Tags Required (Airworthiness Approval Tag) MIDO #43 Concurrence: _____ Date: _____		
Note: Please return this request for conformity with the FAA conformity document to: Federal Aviation Administration, MIDO #43 10100 Reunion Place, Suite 650 San Antonio, Texas 78216		

FAA Form 8120-10 (5-00) (Computer Reproduction) (password "1c") 5/18/2006 12:34 PM

REQUEST FOR CONFORMITY		Control No. ACO-
Continuation Sheet		Page 2 of 2
Design Data:		
Special Instructions:		
Remarks:		

FAA Form 8120-10 (5-00) (Computer Reproduction) (password "1c") 5/18/2006 12:34 PM

Requests for Conformity

- Design Data
 - Applicable drawings, date, revision level and "...or latest FAA approved revision..."
- Special Instructions
- Remarks
 - DER to verify test set-up (DAR conforms!)
 - DER to disposition any "unsats" from DAR
 - DER to contact FAA in the event of a test failure
 - Revision for RFC revision

Requests for Conformity

- Component testing
 - Electronic boxes, pumps, motors, actuators
 - Aircraft components
 - Landing gears, windshields
 - Tested under an FAA approved test plan
 - Company generated test plan
 - DO-160 ("Environmental Conditions and Test Procedures for Airborne Equipment")
 - DO-178 ("Software Considerations in Airborne Systems and Equipment Certification", levels of safety criticality")
 - DO-254 ("Design Assurance Guidance for Airborne Electronic Hardware")
- Software (FAA Order 8110.49)

Requests for Conformity

- RFC e-mailed to ACO
- ACO forwards to MIO
- MIO forwards to MIDO
- MIDO forwards to applicant
- Applicant coordinates conformity activity with DAR
- Local Conformity Activities
 - Company DARs
 - Local DARs
 - Software
- Non-Local Conformity Activities
 - List of MIDO-approved DARs
 - Travel coordinated through QA

Type Inspection Authorization



Type Inspection Authorization

- Second means to obtain FAA conformity support of type certification
 - FAA flight testing (14 CFR 21.33)
 - FAA Form 8110-1
- TIA architecture can be very diverse...
 - One TIA for each flight test aircraft
 - Systems
 - Performance
 - Aircraft handling
 - TIAs “fragged” out into building block segments, building on each other.
 - Small “baby” TIAs first (eg; fire extinguisher, other ground tests, etc.)
 - Validates company TRB/SRB/TIA/conformity processes
 - Enables multiple TIAs open at same time on same aircraft

Type Inspection Authorization

- Issued by FAA as a part of a "TIA Board"
 - Technical Review Board
 - Review primary technical systems principles of operation
 - Safety Review Board (FAA Order 4040.26A)
 - Intent to minimize and mitigate risks
 - Review company level testing results
 - One-time only test to be conducted with FAA participation
- Safety Review Board (FAA Order 4040.26A)
 - Review safety aspects for flight crew and aircraft safety
 - Review Test Hazard Analysis's
 - Mitigate risks to flight crew, aircraft and ground/support personnel
 - ❖ Test hazard matrix
 - ❖ Cause of hazard
 - ❖ Elimination/minimization of risk to acceptable levels
 - ❖ Procedures

Type Inspection Authorization

- FAA Form 8110-1 (FAA Order 8110.4C)
- Each item on form must be completed
- Similar in content to Type Certificate Data Sheet
 - Usually done on additional pages
 - TIA number, revision level, date, page number of pages
 - History of Revisions page
 - Purpose of TIA page
 - Certification Basis
- Similar in content to Type Certificate Data Sheet
 - Design Operating Limitations
 - Additional Design Operating Limitations (for TIA testing)
 - “Item 18, Part I” contains conformity instructions
 - “Item 18, Part II” contains flight test instructions
- Contains all information required to define the aircraft for FAA flight testing

Type Inspection Authorization

- Issued by FAA as a part of a TIA Board
 - TIA review & issuance
 - Similar in contents to a type data sheet
 - Contains all information to define the aircraft for test
 - Signed by all FAA Specialists, MIO, MIDO, Program Manager and possibly ACO Manager

Type Inspection Authorization

- Revision controlled
 - Increase/decrease scope of test
 - Splitting testing between 2 aircraft
 - Delay between TIA Board and FAA conduct of FAA flight testing
- “Test Discontinuance” (14 CFR 21.35)
- Revisions may not require a face-to-face meeting

Data submittals and showing compliance



Data submittals and showing compliance

- 14 CFR 21.33
 - (b) “Each applicant must make all inspections and tests necessary to determine –
 - 1) Compliance with the applicable airworthiness, aircraft noise, fuel venting, and exhaust emissions requirements
- Must be able to show how each applicable 14 CFR 23 paragraph is being shown compliance to (type design data) = certification report(s)
- = compliance audit!!

Data submittals and showing compliance

- 14 CFR Part 21
 - Drawings
 - Process Specifications
 - Certification Reports
 - Levels of approval
 - MOC “sort-of” rules
 - Test Plans submitted to ACO for FAA approval
 - Test Results mostly delegated
 - Others will be at the discretion of the FAA

Data submittals and showing compliance

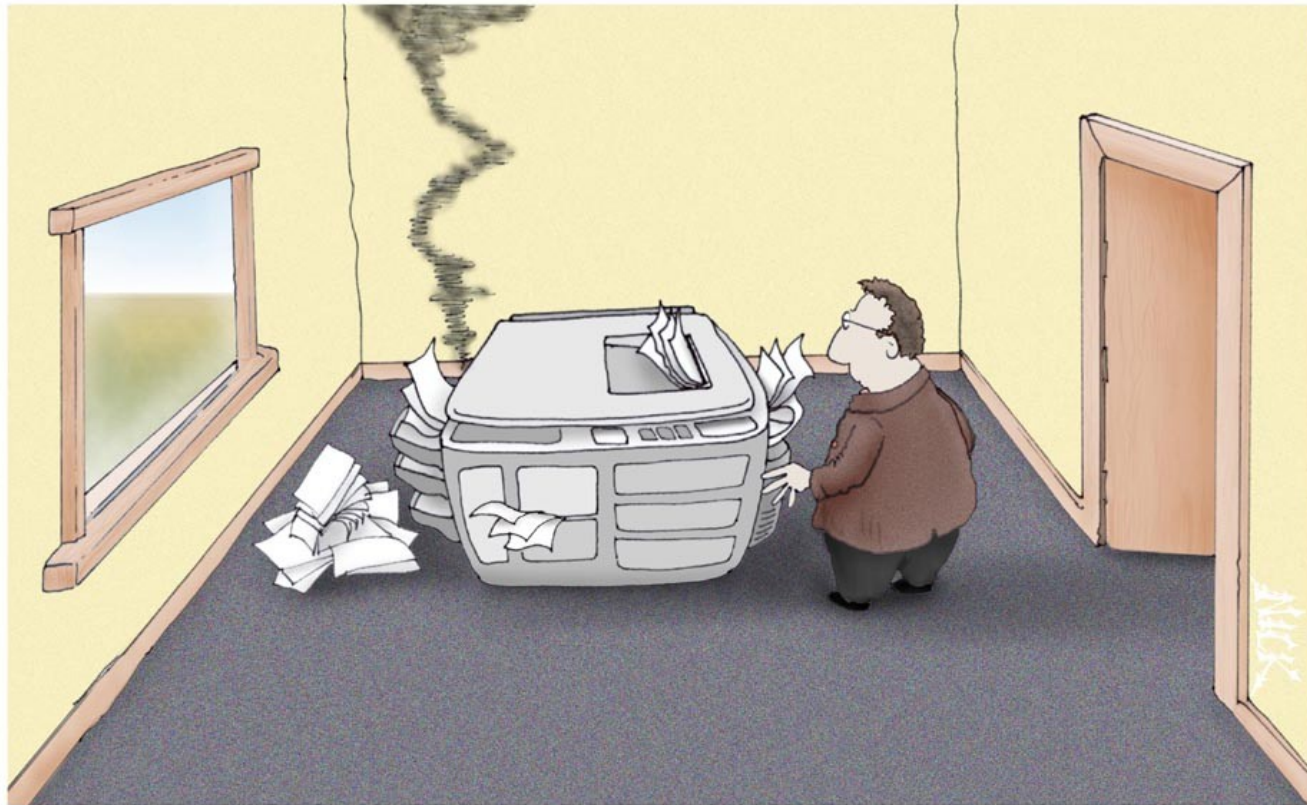
- Tabular listing of reports (number, title and delegation) that will show which DER disciplines can "A" or "R" reports
- Flight test results reports may be an "A", "R", or could be an "S"
 - "S" report submitted to ACO for either
 - Acceptance
 - Approval
 - Held pending FAA performance of flight testing

Data submittals and showing compliance

- Miscellaneous issues requiring FAA acceptance or action
 - “Event reports” that are not part of Type Design data
 - Other documentation not a part of Type Design data, but requires an FAA acceptance / approval / acknowledgment
 - Emergency egress (14 CFR 21.35)
- Suspected Unapproved Parts (SUP)
 - Part 21.3 “Reporting of failures, malfunctions, and defects”
 - Advisory Circular 21-29

Crossing The Boundary...

Submitting "Stuff" to the FAA



Ask not for whom the photocopier jams; it jams for thee.

Submitting Articles to the FAA

- FedEx, UPS, USPS, DHL, Emery, etc.
- Fax's
- Technology...
 - Scan and e-mail
 - Post to a secure, company controlled, internet web site
- Access through password protection
 - FAA
 - Off-site consulting engineers
 - Off-site consulting DERs
 - Others as necessary to support program

Submitting Articles to the FAA

- Database architecture based on need
 - Draft reports
 - Off-site engineers
 - Off-site DERs
 - Reference documentation/drawings
 - "Special Requests"
 - FAA...
- FAA report folders
 - Recommend Approval ("R")
 - Acceptance ("A")
 - Special Requests
 - TIAs
- Sub-folders as necessary
 - May be certification or non-certification
 - Schedules

Submitting Articles to the FAA

- Recommend Approval ("R")
 - Report at current revision
 - Supporting DER 8110-3's
 - Appropriate RFCs
 - Submittal Letter
- Acceptance ("A")
 - Report at current revision
 - Supporting DER 8110-3's
 - Appropriate RFCs
 - Submittal Letter
- Special Requests
 - Drawings
 - Vendor data
 - Supplemental analysis
 - FAA Tracking Sheet responses
 - Pictures
 - "Other stuff", as required

Submitting Articles to the FAA

Submittal Letters

- Formal means to submit items to the FAA
 - Certification as well as non-certification items
 - Anything that needs FAA
 - “approval”
 - “acceptance”
 - “review”
 - “acknowledgement”

Submitting Articles to the FAA

Submittal Letters

- FAA should generate FAA Tracking Sheet
 - Submittal number
 - Report number
 - Report/subject title
 - Requested internal (FAA) review and approval date
 - Identification of FAA Specialists to review & comment on submittal

Submitting Articles to the FAA

Submittal Letters

- Submittal control number
 - “FAA 06-123”
 - Date of submittal
 - Addressed to ACO Program Manager or appropriate FAA Specialist
 - Nature of submittal
 - Report
 - Supplemental information/data, etc.
- FAA action
 - Approve
 - Accept
 - Review and comment
- Cc: additional FAA Specialist for information or action
- Cc: internal company personnel

Submitting Articles to the FAA

Submittal Letters

- FAA responds with their Tracking Sheet
 - Approval ("R")
 - Acceptance ("A")
 - Rejected
 - Accepted with comments
 - Requires further information/details from company
 - FAA Specialist
 - FAA Program Manager – "Official" signature to close out
- Make internal distribution

Submitting Articles to the FAA

Submittal Letters

- Submittal Letters
 - Logged in correspondence log by FAA control number ("06-123") with subject, to whom and action
 - Can be mailed, scanned & e-mailed, or placed on secure web site
 - Include internal distribution, if appropriate
 - Company retains original (unless mailed)
 - Filed in reverse numerical sequence by calendar year

Submitting Articles to the FAA

Submittal Letters

- Enter into Certification Report database
 - FAA correspondence number
 - Date submitted
 - Date FAA opened the e-mail
 - !!Use e-mail “return receipt” for all FAA recipients
 - File “return receipt” with submittal letter
- Provides means to track number of working days the FAA has had the report to review
 - “Approve” vs “accept”

Submitting Articles to the FAA

Submittal Letters

- When revising a report and submitting to FAA...
 - Use same base number ("06-123") for initial release
 - FAA should place comments on FAA Tracking Sheet
 - FAA should return comments to company for resolution
 - Next revision of report submittal letter will use same submittal letter, with a "-1" suffix ("06-123-1")
 - Signify that this submittal ("06-123-1") is related to original submittal ("06-123")
 - Provides integrity to submittal for historical basis
 - Any additional comments/response to FAA would go on same Tracking Sheet ("06-123") but annotated as a "-1" submittal

Proper care and maintenance of the PSP and PSCP



Proper care and maintenance of the PSP and PSCP

- Foundation and roadmap for program management of the certification program
 - TC, STC, amend type design, “design improvements”
- Revision process
 - Sign-offs IAW
- PSCP format
 - Volume I – “fixed” or “non-volatile” data
 - policies and procedures
 - Volume II – “volatile” data
 - Organizational charts
 - DERs delegated to approve/recommend approval report

Questions...??

